

## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

(i) APPLICANT: KHUDYAKOV, YURI E.  
FIELDS, HOWARD A.

(ii) TITLE OF INVENTION: MOSAIC PROTEIN AND RESTRICTION  
ENDONUCLEASE ASSISTED LIGATION METHOD FOR MAKING  
THE SAME

(iii) NUMBER OF SEQUENCES: 55

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: JONES & ASKEW, LLP  
(B) STREET: 191 Peachtree Street, N.W., 37th Floor  
(C) CITY: Atlanta  
(D) STATE: GA  
(E) COUNTRY: USA  
(F) ZIP: 30303-1769

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk  
(B) COMPUTER: IBM PC compatible  
(C) OPERATING SYSTEM: PC-DOS/MS-DOS  
(D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: US  
(B) FILING DATE:  
(C) CLASSIFICATION:

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: WARREN, WILLIAM L.  
(B) REGISTRATION NUMBER: 36,714  
(C) REFERENCE/DOCKET NUMBER: 03063-0380

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 404-818-3700  
(B) TELEFAX: 404-818-3799

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 55 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005270 94T6460  
Sub  
BS

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCAAACGTA ACACCATTTCG TCGTC  
55

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 69 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

CCCCGGATCC TATTCGGAC CAACGATCTG ACCACCACCC GGGAATTAA  
CGTCCTGCGG 60

ACGACGAAT  
69

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 54 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005210 946460

Sub  
BS

- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

CCCCGAATTC AACCGAAACC GCAACGTCAG ACCAAACGTA ACACCAACCG TCGT  
54

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 70 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCACCC GGGAATTAA  
CGTCCTGCGG 60

ACGACGGTTG  
70

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 51 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO

005270" 94T6460

Sub  
BS

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCAAACGTA ACACCTACCG T  
51

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 73 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCACCC GGGAATTTAA  
CGTCCTGCGG 60

ACGACGGTAG GTG

73

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 55 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005270" 9476460

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(A) ORGANISM: Hepatitis virus

CCCCGAATTC AACCGAAACC GCAACGTAAA CCGAACCGTA ACACCAACCG TCGTC  
55

(A) LENGTH: 69 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(A) ORGANISM: Hepatitis virus

ACGACGGTT  
69

(A) LENGTH: 63 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(iii) HYPOTHETICAL: NO

(v) ~~FRAGMENT TYPE:~~ internal

(A) ORGANISM: Hepatitis virus

CCCCGAATTC AACCGAAACC GCAACGTCAG CCGAAACGTA ACACCCCGCG  
TCGTCCGCAG 60

GAC  
63

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 60 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

CCCCGGATCC TATTTCTGGAC CAACGATCTG ACCACCACCC GGGAATTTAA  
CGTCTTGC GG 60

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 55 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCAAACGTA ACGCTCACCG TCGTC  
55

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCACCC GGGAATTTAA  
CGTCCTGCGG 60

ACGACGGTG  
69

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 55 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005210-9416460

Sub  
BS

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

CCCCGAATTC AACCGAAACC GCAACGTAAA AACCAGCGTA ACACCAACCG TCGTC  
55

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCACCC GGGAATTTAA  
CGTCCTGCGG 60

ACGACGGTT  
69

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 55 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005270-9476460

Sub  
B5



- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCAAACGTA ACACCATTCTG TCGTC  
55

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 69 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

CCCCGGATCC TATTTTCGGAA CGTAGATAAC ACCACCACCC GGGAATTTAA  
CGTCCTGCGG 60

ACGACGAAT  
69

(2) INFORMATION FOR SEQ ID NO:17:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 56 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO

005210" 94T6460

Sub  
B5

- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCGAACGTA ACACCAACCG TCGTCC  
56

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 65 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

CCCCGGATCC TATTTCCGGAC CAACGATCTG ACCACCACCA GAGAAACGAA  
CGTCCGGACG 60

ACGGT  
65

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 54 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO

005210-94T6460

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(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

CCCCGAATTC AACCGAAACC GAAACGTCAG ACCAAACGTA ACACCCTGCG TCGT  
54

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 73 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCAGCC GGGAATTTAA  
CGTTTTTCGG 60

ACGACGACGC AGG  
73

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 55 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

005270"94TT6460

Sub  
BS

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

CCCCGAATTC AACCGAAACC GCAACGTAAA ACCAAACGTA AAGCTCACCG TCGTC  
55

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 69 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

CCCCGGATCC TATTTTCGGAC CAACGATCTG ACCACCACCC GGGAATTTAA  
CGTCCTGCGG 60

ACGACGGTG  
69

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: not relevant

(D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

005270" 94TT6460

Sub  
BS

(iv) ANTI-SENSE: NO

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Pro	Lys	Pro	Gln	Arg	Lys	Thr	Lys	Arg	Asn	Thr	Ile	Arg	Arg
Pro	Gln												
1			5				10					15	
Asp	Val	Lys	Phe	Pro	Gly	Gly	Gly	Gln	Ile	Val	Gly		
			20				25						

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: not relevant  
 (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Pro	Lys	Pro	Gln	Arg	Gln	Thr	Lys	Arg	Asn	Thr	Asn	Arg	Arg
Pro	Gln												
1			5				10					15	
Asp	Val	Lys	Phe	Pro	Gly	Gly	Gly	Gln	Ile	Val	Gly		
			20				25						

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids  
 (B) TYPE: amino acid  
 (C) STRANDEDNESS: not relevant  
 (D) TOPOLOGY: not relevant

005210" 9476460

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- (ii) MOLECULE TYPE: protein
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:  
(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Tyr Arg Arg  
Pro Gln  
1 5 10 15  
Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: not relevant  
(D) TOPOLOGY: not relevant

- (ii) MOLECULE TYPE: protein
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:  
(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Pro Lys Pro Gln Arg Lys Pro Asn Arg Asn Thr Asn Arg Arg  
Pro Gln  
1 5 10 15  
Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25

(2) INFORMATION FOR SEQ ID NO:27:

- (i) SEQUENCE CHARACTERISTICS:

005210" 94T16460

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

- (ii) MOLECULE TYPE: protein
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Pro Lys Pro Gln Arg Gln Pro Lys Arg Asn Thr Pro Arg Arg  
 Pro Gln  
 1 5 10 15  
 Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25

(2) INFORMATION FOR SEQ ID NO:28:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 28 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: not relevant
  - (D) TOPOLOGY: not relevant

- (ii) MOLECULE TYPE: protein
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Ala His Arg Arg  
 Pro Gln  
 1 5 10 15  
 Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly

005210-012500

20

25

## (2) INFORMATION FOR SEQ ID NO:29:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Pro Lys Pro Gln Lys Arg Asn Gln Arg Asn Thr Asn Arg Arg  
 Pro Gln  
 1 5 10 15  
 Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25

## (2) INFORMATION FOR SEQ ID NO:30:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

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Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Ile Arg Arg  
 Pro Gln 1 5 10 15  
 Asp Val Lys Phe Pro Gly Gly Gly Val Ile Tyr Val  
 20 25

## (2) INFORMATION FOR SEQ ID NO:31:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Pro Lys Pro Gln Arg Lys Thr Glu Arg Asn Thr Asn Arg Arg  
 Pro Gln 1 5 10 15  
 Asp Val Arg Phe Ser Gly Gly Gly Gln Ile Val Gly  
 20 25

## (2) INFORMATION FOR SEQ ID NO:32:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

005270-94776500

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Pro Lys Pro Lys Arg Gln Thr Lys Arg Asn Thr Leu Arg Arg  
 Pro Lys 1 5 10 15  
 Asn Val Lys Phe Pro Ala Gly Gly Gln Ile Val Gly  
 20 25

## (2) INFORMATION FOR SEQ ID NO:33:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Pro Lys Pro Gln Arg Lys Thr Lys Arg Lys Ala His Arg Arg  
 Pro Gln 1 5 10 15  
 Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25

## (2) INFORMATION FOR SEQ ID NO:34:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 82 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

005270-012500

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

CCCCGAATTC AAGCCGCCCA CATAACATAC CTAGAACAAG GAATGCATCT  
CGCAGAACAA 60

TTCAAACAAA AGGCACTTCG TC  
82

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 84 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

CCCCGGATCC TAACTAGCCT CTTCCATCTC ATCAAACCTCC TGATACAAAA  
CCTCCCTATC 60

CGGGATAACA GCCGGACGAA GTGC  
84

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 85 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

005210-01500

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

CCCCGAATTC AAGCTAGTCA CTTACCGTAT ATCGAGCAGG GAATGCAGTT  
AGCTGAACAG 60

TTTAAACAGA AGGCTCTGGC TTTTG  
85

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

CCCCGGATCC TAAGGCCGAG CGTCAGACTC AGGAACATAA TGAGTAGGAG  
AAACATGATT 60

ACCCCGAGAA GCAAAAGCCA G  
81

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

005210-012500

- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

CCCCGAATTC AACGGCCTGC GATAATACCG GATAGGGAGG TTCTTCATAG  
GGAGTTTGAC 60

GAGATGGAGG AGGCTTTTGC G  
81

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 79 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CCCCGGATCC TACTGCGAAG CATCAGACTC AGGAACATAA TGAGCCGGAC  
TAACATGATT 60

CCCACGAGAC GCAAAAGCC  
79

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 83 base pairs

005210-94160

(B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA  
 (iii) HYPOTHETICAL: NO  
 (iv) ANTI-SENSE: NO  
 (v) FRAGMENT TYPE: internal  
 (vi) ORIGINAL SOURCE:  
 (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

CCCCGAATTC AATCGCAGGC GCGCCTTAT ATTGAGCAGG CTCAGGTTAT  
 TGCTCATCAG 60

TTTAAGGAGA AGGTTCTTGC TTT  
 83

(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 83 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA  
 (iii) HYPOTHETICAL: NO  
 (iv) ANTI-SENSE: NO  
 (v) FRAGMENT TYPE: internal  
 (vi) ORIGINAL SOURCE:  
 (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

CCCCGGATCC TACGGCTTCG CGTCCGACTC AGGAACATAA TGAGTCGGAG  
 AATCATGATT 60

ACCACGAGAA GCAAAAGCAA GAA  
 83

(2) INFORMATION FOR SEQ ID NO:42:

005210-041650

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 79 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

CCCCGAATTC AAAAGCCGGC GATAATCCT GACCGTGAGG TTCTGTATCG  
TGAGTTTGAT 60

GAGATGGAGG AGTCACAGC  
79

## (2) INFORMATION FOR SEQ ID NO:43:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 87 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

CCCCGGATCC TAAACGCCA GAGCCTTCTG CTTAAACTGC TCAGCAAGCA  
TCATACCCTG 60

005210-94-1160

CTCAATGTAC GGAAGATGCT GTGACTC  
87

(2) INFORMATION FOR SEQ ID NO:44:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 76 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

CCCCGAATTC AAGCGTTTGC TTCTCGTGCT AATCATGTTG CTCCGACTCA  
TTATGTTACG 60

GAGTCAGATG CTAAGC  
76

(2) INFORMATION FOR SEQ ID NO:45:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 84 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (iii) HYPOTHETICAL: NO
- (iv) ANTI-SENSE: NO
- (v) FRAGMENT TYPE: internal
- (vi) ORIGINAL SOURCE:
  - (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

005210-012500



CGGAACCAGA GCCGGCTTAG CATC  
84

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 80 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(iii) HYPOTHETICAL: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:  
(A) ORGANISM: Hepatitis virus.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

CCCCGAATTC AAGCTTTCGC TTCTCGTGGT AATCATGTTG CTCCTACGCA  
TTATGTTGTT 60

GAGTCAGATG CTTCTGCTTC  
80

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:  
 (A) LENGTH: 86 base pairs  
 (B) TYPE: nucleic acid  
 (C) STRANDEDNESS: single  
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:  
(A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

CCCCGGATCC TAGAAAGCCA GAACCTTCTC CTTAAACTGA CCAGCAATAG  
CACGCGTCTC 60

GTCCATATAC GGCAGAGAAG CAGAAG  
86

## (2) INFORMATION FOR SEQ ID NO:48:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 80 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: cDNA

## (iii) HYPOTHETICAL: NO

## (iv) ANTI-SENSE: NO

## (v) FRAGMENT TYPE: internal

## (vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis virus

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

CCCCGAATTC AAGCTTTCGC TAGTCGTGGG AATCATGTGT CGCCGCGTCA  
TTATGTGCCT 60

GAGTCTGAGC CTCAGGTTGT  
80

## (2) INFORMATION FOR SEQ ID NO:49:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 80 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: cDNA

## (iii) HYPOTHETICAL: NO

## (iv) ANTI-SENSE: NO

## (v) FRAGMENT TYPE: internal

## (vi) ORIGINAL SOURCE:

005270-911660

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

CCCCGGATCC TAAGAAGCCT CCTCCATCTC ATCAAAAGCC TCATACAGTA  
TCTCCTTATC 60

CGGCGTAACA ACAACCTGAG  
80

(2) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 52 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

CCCCGAATTC AAGCTTCTAA GGCCGCGCTG ATTGAGGAGG GTCAGCGTAT GG  
52

(2) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 48 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

005210-94121650

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

CCCCGGATCC TACTGGATCT TAGACTTCAG CATCTCAGCC ATACGCTG  
48

(2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 352 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: not relevant

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

Ala Ala His Ile Pro Tyr Leu Glu Gln Gly Met His Leu Ala  
Glu Gln 1 5 10 15  
Phe Lys Gln Lys Ala Leu Arg Pro Ala Val Ile Pro Asp Arg  
Glu Val 20 25 30  
Leu Tyr Gln Glu Phe Asp Glu Met Glu Glu Ala Ser His Leu  
Pro Tyr 35 40 45  
Ile Glu Gln Gly Met Gln Leu Ala Glu Gln Phe Lys Gln Lys  
Ala Leu 50 55 60  
Ala Phe Ala Ser Arg Gln Asn His Val Ser Pro Thr His Tyr  
Val Pro 65 70 75  
80  
Glu Ser Asp Ala Arg Pro Ala Ile Ile Pro Asp Arg Glu Val  
Leu His

005210-012500

sub  
BS

85

90

95

Arg Glu Phe Asp Glu Met Glu Glu Ala Phe Ala Ser Arg Gly  
Asn His 100 105 110

Val Ser Pro Ala His Tyr Val Pro Glu Ser Asp Ala Ser Gln  
Ala Ala 115 120 125

Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln Phe Lys  
Glu Lys 130 135 140

Val Leu Ala Phe Ala Ser Arg Gly Asn His Asp Ser Pro Thr  
His Tyr 145 150 155  
160

Val Pro Glu Ser Asp Ala Lys Pro Ala Ile Ile Pro Asp Arg  
Glu Val 165 170  
175

Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu Ser Gln His Leu  
Pro Tyr 180 185 190

Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys  
Ala Leu 195 200 205

Ala Phe Ala Ser Arg Gly Asn His Val Ala Pro Thr His Tyr  
Val Thr 210 215 220

Glu Ser Asp Ala Lys Pro Ala Leu Val Pro Asp Lys Glu Val  
Leu Tyr 225 230 235  
240

Gln Gln Tyr Asp Glu Met Glu Glu Ala Phe Ala Ser Arg Gly  
Asn His 245 250  
255

Val Ala Pro Thr His Tyr Val Val Glu Ser Asp Ala Ser Ala  
Ser Leu 260 265 270

Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe Lys  
Glu Lys 275 280 285

005216460

Val Leu Ala Phe Ala Ser Arg Gly Asn His Val Ser Pro Arg  
 His Tyr 290 295 300

Val Pro Glu Ser Glu Pro Gln Val Val Val Thr Pro Asp Lys  
 Glu Ile 305 310 315  
 320

Leu Tyr Glu Ala Phe Asp Glu Met Glu Glu Ala Ser Lys Ala  
 Ala Leu 325 330  
 335

Ile Glu Glu Gly Gln Arg Met Ala Glu Met Leu Lys Ser Lys  
 Ile Gln 340 345 350

(2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

CTGGTTCCGC GTGGATCCCC AGGAATTCCC GGGTCGACTC GAGCGGCCGC ATCGTGA  
 57

(2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 27 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

005270-012500

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

TCGCAGCGAA TTCTCGAGGA TCCATCC  
27

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 56 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: double

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(v) FRAGMENT TYPE: internal

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Hepatitis virus

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

CTGGTTCCGC GTGGATCGCA GCGAATTCTC GAGGATCCAT CCCGGCCGCA TCGTGA  
56

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